

4.5 PSP Cover Sheet (Attach to the front of each proposal)

Proposal Title: Sacramento River Small Diversion Fish Screen Mechanical Monitoring & Maintenance Project  
 Applicant Name: Family Water Alliance  
 Mailing Address: PO Box 365 Maxwell, CA 95955  
 Telephone: (530) 438-2026  
 Fax: (530) 438-2940  
 Email: fwa@makd.com

Amount of funding requested: \$ 312,700.00 for 3 years

Indicate the Topic for which you are applying (check only one box).

- Fish Passage/Fish Screens
- Habitat Restoration
- Local Watershed Stewardship
- Water Quality
- Introduced Species
- Fish Management/Hatchery
- Environmental Education

Does the proposal address a specified Focused Action? no

What county or counties is the project located in? Colusa County

Indicate the geographic area of your proposal (check only one box):

- Sacramento River Mainstem
- Sacramento Trib: \_\_\_\_\_
- San Joaquin River Mainstem
- San Joaquin Trib: \_\_\_\_\_
- Delta: \_\_\_\_\_
- East Side Trib: \_\_\_\_\_
- Suisun Marsh and Bay
- North Bay/South Bay: \_\_\_\_\_
- Landscape (entire Bay-Delta watershed)
- Other: \_\_\_\_\_

Indicate the primary species which the proposal addresses (check all that apply):

- San Joaquin and East-side Delta tributaries fall-run chinook salmon
- Winter-run chinook salmon
- Late-fall run chinook salmon
- Delta smelt
- Splittail
- Green sturgeon
- Migratory birds
- Other: \_\_\_\_\_
- Spring-run chinook salmon
- Fall-run chinook salmon
- Longfin smelt
- Steelhead trout
- Striped bass
- All chinook species
- All anadromous salmonids

Specify the ERP strategic objective and target (s) that the project addresses. Include page numbers from January 1999 version of ERP Volume I and II:

Priority One Species protection pg 32-33 Vol. I ERPP

Indicate the type of applicant (check only one box):

- |   |   |
|---|---|
| <input type="checkbox"/> State agency                               | <input type="checkbox"/> Federal agency |
| <input checked="" type="checkbox"/> Public/Non-profit joint venture | <input type="checkbox"/> Non-profit     |
| <input type="checkbox"/> Local government/district                  | <input type="checkbox"/> Private party  |
| <input type="checkbox"/> University                                 | <input type="checkbox"/> Other: _____   |

Indicate the type of project (check only one box):

- |                                     |  |
|-------------------------------------|--|
| <input type="checkbox"/> Planning   | <input checked="" type="checkbox"/> Implementation |
| <input type="checkbox"/> Monitoring | <input type="checkbox"/> Education                 |
| <input type="checkbox"/> Research   |  |

By signing below, the applicant declares the following:

- 1.) The truthfulness of all representations in their proposal;
- 2.) The individual signing the form is entitled to submit the application on behalf of the applicant (if the applicant is an entity or organization); and
- 3.) The person submitting the application has read and understood the conflict of interest and confidentiality discussion in the PSP (Section 2.4) and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant, to the extent as provided in the Section.

Susan Sutton  
Printed name of applicant

Susan Sutton  
Signature of applicant

## Executive Summary

The Sacramento River Small Diversion Fish Screen Program is a collaborative effort to screen small agricultural diversions along the Sacramento River involving landowners, Family Water Alliance, National Fish and Wildlife Foundation, Natural Resource Conservation Service, National Marine Fisheries Service, Bureau of Reclamation, U.S. Fish & Wildlife Service, California Department of Fish and Game, CALFED, and private foundations. The program has been in place for two years. Currently, four diversions have been screened, and another three diversions will have screens in place by the end of 1999. It is anticipated that by the end of 2000, an additional five screens will be placed between Redding and Sutter County.

The first four diversions were screened with cylindrical water purge systems that were considered off-the-shelf technology. Of these four diversions, three of the systems failed within the first year and half of operation. Two of the systems imploded rendering the screens completely inoperable. One screen suffered a bearing malfunction, however, the screen remained cylindrical, and when the bearing was replaced functioned properly. It continues to function today, and an automatic cycling system was added to ensure that fine silt would not build up in the bearings during the period of time when the pump is not in operation.

When this program started it was assumed that off-the-shelf technology would be sufficient when screening small diversions (under 40 cfs), yet, this experience has taught all of the individuals involved with the program that there are many aspects to fish screening that were not previously anticipated, and further monitoring, research, and development is necessary in order to find a screening solution that will provide farmers with a reliable and economic fish screen.

In order to assist in the finding solutions to the fish screening problems that have occurred in the Sacramento River, Family Water Alliance is proposing a mechanical monitoring and maintenance program that will enhance the existing fish screen installation program. This program will consist of three parts: 1.) Modifying the existing fish screens to include a pressure sensing device that will shut down the pump before catastrophic screen failure occurs, or pump cavitation causes the loss of a pump, 2.) Twice yearly maintenance checks on the installations, and 3.) Compilation of data to be used to aid in future screening decisions, and development of a pre-installation checklists and post installation maintenance checklists that are site specific.

Since each site is unique in many of its characteristics a one size fits all approach will not work even for small screens, however, the information gathered from these maintenance checks can be used to determine common

variables, and then be used when examining future sites to help determine the best screening technics. This information will be shared with all interested agencies, or private individuals that are involved in the screening of diversions in California.

## **Project Description**

### **Proposed Scope of Work**

The water purge systems uses a rotating bar to spray debris from the surface of the screen. These rotating bars use either a water lubricated bearing or a sealed bearing. There have been difficulties with both types of bearing in the stretch of the river going through Colusa County due to the high load of fine sediment in the water. The existing screen installations require the addition of pressure sensors that will recognize a change in the water pressure inside the screen caused by a malfunctioning cleaning mechanism. This change in pressure will send a relay to shut the pump down and notify the landowner that there is a problem with the system. This will allow the landowner to address the problem before additional damage is done to either the pump or the screen. Family Water Alliance will document the cause of the malfunction, the river conditions, and any repairs that were necessary. This information will be added to the site chronicle to be used both in the development of pre-installation and maintenance checklist. The information gathered will aid in decisions for the future use of water purge systems.

There will be two USBR (Universal Stream Bottom Retrievable) fish screens in place in Colusa County by the end of April. These screens use an air purge cleaning system that has no moving parts. We are optimistic about the reliability of this screen, but the system is to date un-tested for long-term reliability in true river conditions. With this in mind, it is difficult to anticipate what problems may be encountered at these sites. The mechanical monitoring will allow independent research and documentation on the screen, along with the development of pre and post maintenance checklists.

In order to assure the proper functioning of all of the fish screens, Family Water Alliance proposes a twice yearly inspection, and preventive maintenance check. This maintenance check will be performed by a private company that is specially equipped to inspect and repair any minor damages to the fish screens. This company will be proficient in the installation of fish screens, have certified divers on staff, and also have access to all of the necessary equipment for the removal and repair of the screens if necessary.

The cost of crane rental adds exorbitant amounts to the cost of maintaining a fish screen, moreover, bank conditions often hinder safe access for divers, or the removal of malfunctioning screens in a timely manner, and there are environmental impacts associated with using a crane. To help

contain the costs, and allow for an alternative option for accessing fish screens a small barge or perhaps a catamaran will be outfitted with a wench that will be used to retrieve screens. The barge will also give divers an easier access for the inspection of the screen. This barge will also be readily equipped to facilitate the prompt repair of minor damages to the screens. As a preventative measure, the bearings and nozzles on the existing water purge systems will be replaced yearly. The cost of the replacement parts will be the landowners responsibility.

Family Water Alliance will document the inspections, river and site conditions, and any repairs necessary. Family Water Alliance will use the information gathered during site visits, screen inspections and subsequent repairs, and collaborate with our program partners to generate site specific maintenance checklists, and develop pre-installation checklists. This information will be compiled to assist with further installations and made available to interested parties.

### **Location and Geographic Boundaries of Project**

The Sacramento River Small Diversion Fish Screen Program has focused on Colusa County for the last two years. The National Marine Fisheries Service has determined that the stretch of river between Redding and Hamilton City are critical to the restoration of a healthy anadromous fisheries population. With this in mind, Family Water Alliance has already reached out to landowner groups in this area. We anticipate the reach of this project to extend from Redding to Sutter County and the Tisdale Weir.

### **Ecological/Biological Benefits**

The anadromous fish populations have consistently decreased in the Sacramento River, and chinook salmon, splittail, and steelhead trout have been named as a priority one species in the ERPP Volume 1, Revised draft 2/99 (p.32-33). The reasons for the declines are thought to be numerous including dams that prevent safe passage of fish to traditional spawning ground, cyclical weather patterns, and runoff from urban areas that pollutes the water. The over four hundred small diversions located in the mainstem of the Sacramento River are individually fairly benign in their disruption of the spawning and subsequent movement of anadromous species to their ocean atmosphere, however, cumulatively their impacts could be considerable. As more and more species are listed on the State and Federal Endangered Species lists it becomes even more important to enlist landowners in voluntary programs that focus on protecting the resource.

## **Technical Feasibility and Timing**

The screening of all diversions along the Sacramento mainstem is thought to be critical in the restoration of anadromous fish populations. At this time an efficient, and economical screening method has not been identified. The screening of large diversions has involved multi-million dollar projects with large budgets for continued maintenance and upkeep. Small farmers that operated with very small profit margins cannot afford to take on the long-term investment that is required to keep a small screen operating from year to year. The removal of a small screen that has malfunctioned can cost as much as \$10,000.00, nor do they have the resource readily available to them to be able to be able to perform regular maintenance themselves.

These initial projects allow for the opportunity to develop mechanical and non-mechanical parameters for the screening of small diversions that can be applied to differing water conditions throughout the state. The continuing effort to improve the durability of screens will include the examination of different screening theories, including retrievability, settling reservoirs to provide cleaner water for the backwash systems, air purge systems, and different metals that with retard algae growth and withstand the constant abrasion of fine sands.

A spring and fall maintenance schedule will be set up to coincide with the farmers need for water delivery. This project will work in partnership with the technical staff at Natural Resource Conservation Service in Colusa County, and the Natural Resource Conservation Service Fish Screen Technical staff in Davis. In addition, Family Water Alliance will seek technical input from National Marine Fisheries, the US Bureau of Reclamation, the Anadromous Fish Screen Program and the Department of Fish and Game.

## **Local Involvement**

This is a voluntary program, and participation in the mechanical monitoring and maintenance program is also voluntary. Each landowner is expected to participate by allowing access for the inspection of his screen.

This project is supported by the Colusa County RCD, and participating landowners.

There are no anticipated third party impacts.

**Cost**

Task	Direct Labor Hours	Direct Salary and Benefits	Service Contracts	Materials and Acquisition Costs	Miscellaneous and Other Costs	Overhead and Indirect Cost	Total Cost
Task 1	\$13,600			\$3,960			\$17,560
Task 2			\$255,090				\$255,090
Task 3		\$23,600					\$23,600
Project Management Task		\$16,450					\$16,450

See Attached Budget Detail

Task	Quarterly Budget Oct-Dec 99	Quarterly Budget Jan-Mar 00	Quarterly Budget Apr-Jun 00	Quarterly Budget Jul-Sep 00	Quarterly Budget Oct-Dec 00	Total Budget
Task 1	\$17,500					\$17,500
Task 2			\$20,900		\$10,450	\$31,350
Task 3			\$1,950		\$1,950	\$3,900
<b>Total</b>	\$17,500		\$22,850		\$12,400	\$52,750

Task	Quarterly Budget Jan-Mar 01	Quarterly Budget Apr-Jun 01	Quarterly Budget Jul-Sep 01	Quarterly Budget Oct-Dec 01	Total Budget
Task 1					
Task 2		\$41,800		\$20,900	\$62,700
Task 3		\$3,700		\$3,700	\$7,400
<b>Total</b>		\$45,500		\$24,600	\$70,100

Task	Quarterly Budget Jan-Mar 02	Quarterly Budget Apr-Jun 02	Quarterly Budget Jul-Sep 02	Quarterly Budget Oct-Dec 02	Total Budget
Task 1					
Task 2		\$62,700		\$31,350	\$94,050
Task 3		\$6,150		\$6,150	\$12,300
<b>Total</b>		\$68,850		\$37,500	\$106,350

This budget assumes that fifteen screens will be installed by the Spring of 2002. The actual cost will vary depending on the number of installations. The budget detail includes a contingency fund for unforeseen river conditions. These funds will be applied to the spring or fall inspections where needed, not to exceed the maximum budgeted for the year.

The project management will be performed by Family Water Alliance. Complete inspections of the completed work task, i.e. installation of pressure sensing devices, completed screen inspections, documentation of site conditions and reports, validating invoices, issuing payments and necessary periodic reporting to CALFED.

All payments will be made on completion of work.

### **Cost-Sharing**

The Sacramento River Small Diversion Fish Screen Program receives funding from a multitude of public and private agencies including a cost share from the landowners. This project includes the landowners cost sharing in replacement parts. Family Water Alliance will contribute in kind cost for office equipment, paper supplies, and postage.

### **Applicant Qualifications**

Family Water Alliance (FWA) is a 501C-3 non profit corporation established in 1991. Its primary mission is to educate the public on rural issues. Four years ago, FWA participated in the initiation of the Sacramento River Small Diversion Fish Screen Program, and has been a driving force in the screening of small diversions in Colusa County. One of our primary motto's has been "As long as there are fish in the river there will be water on the land," demonstrates our commitment to the protection of the fisheries resource.

#### **Susan Sutton**

**Project Manager, Sacramento River Small Diversion Fish Screen Program**

2 years

Experience:

Susan has worked for the past two years finding funding for the program through grants, budgets, coordination and a liaison between agencies and landowners, presentations to generate interest within the farming community, and public relations.

#### **Rita Trainer**

**Project Coordinator, Sacramento River Small Diversion Fish Screen Program**

2 years

**Experience:**

Rita's responsibilities have included reporting, site documentation, permit application, liaison between landowners, agency personnel, installers/manufactures, coordination of activities, financial reporting, grant writing, presentations, and general clerical work.

**Installation/Mechanical Inspection**

There are currently three private companies that have expressed interest in doing the required mechanical work. All three companies have at least five years of river experience, certified divers on staff, and a working knowledge of the mechanical workings of fish screen installations.

Intake Screens, Inc.  
Russ Berry, Sacramento

Sierra View Divers  
Doug Maxfield, Chico

Northwest Associates  
Scott Simmons, Redding

Technical assistance will be provided by the Colusa County NRCS engineering staff.

Sacramento River Small Diversion Fish Screen Program  
Mechanical Monitoring and Minor Maintenance Project  
Task One

Installation of pressure alarm systems  
at two sites.

Divers: 4 days @ \$1800 per day \$ 7,200.00

Shore installation of electricals, and gauges  
2 days per site @ \$1600/day \$ 6,400.00

Parts:

400 feet galvanized pipe \$ 560.00

pump controller \$ 1,200.00

modem \$ 700.00

regulator \$ 200.00

small compressor \$ 800.00

flexible hose, wiring, misc. \$ 100.00

transmitter switch/differential switch \$ 400.00

Total Parts \$ 3,960.00

Total Task 1 \$ 17,560.00

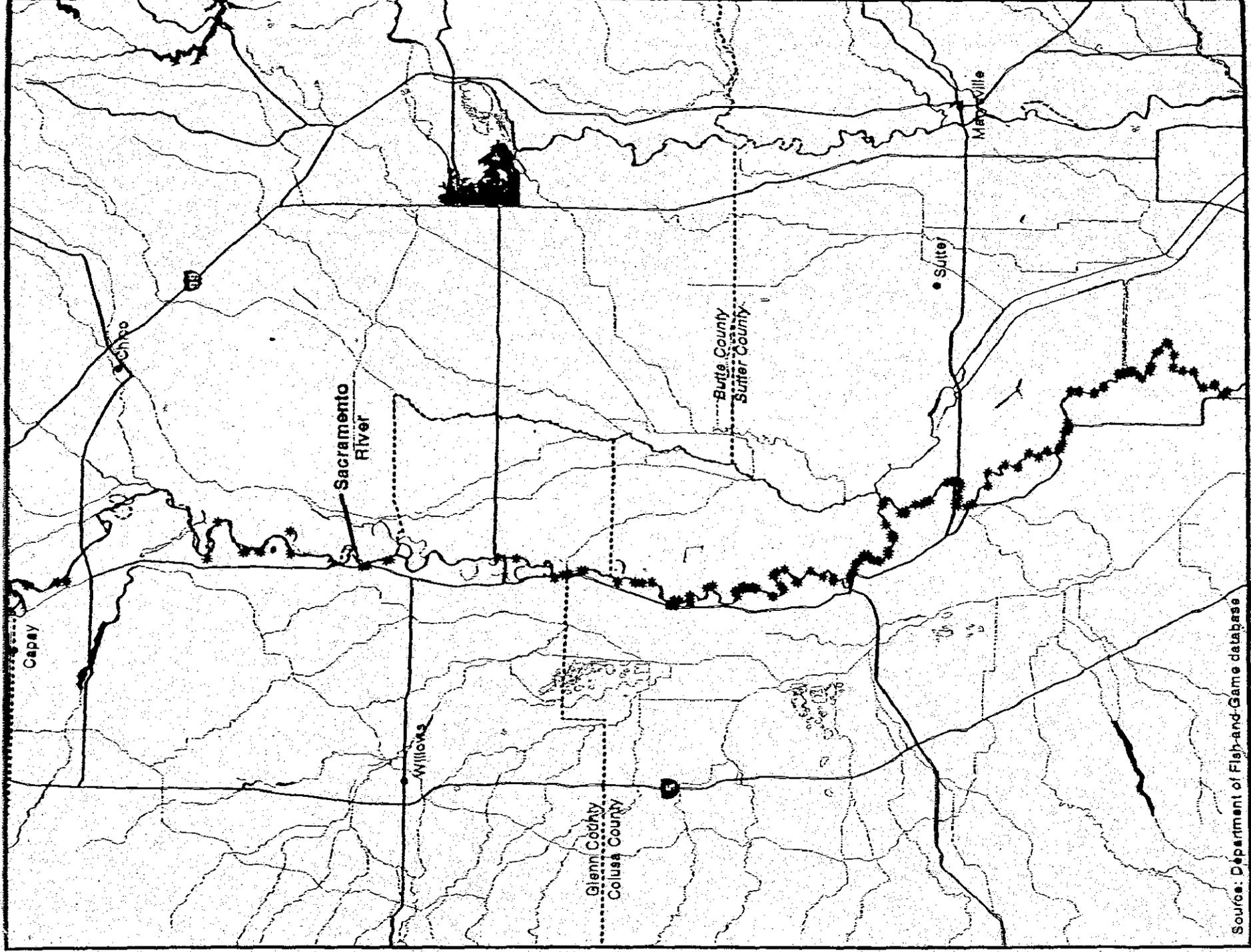
Sacramento River Small Diversion Fish Screen Program  
 Mechanical Monitoring and Minor Maintenance Project  
 Task Two

	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>
Daily rate: Includes OSHA required 3 divers, boat, underwater video equipment, and hydraulic gear for minor maintenance.	\$ 2,090.00	\$ 2,090.00	\$ 2,090.00
Estimated days for inspection and minor maintenance.	10 \$20,900.00	20 \$ 41,800.00	30 \$ 62,700.00
Contingency Fund for unforeseen events ie excessive debris or silt, or a breached hull.	\$15,950.00	\$ 22,330.00	\$ 28,710.00
Second dive; One day per site	\$10,450.00	\$ 20,900.00	\$ 31,350.00
<b>Total for Contract Labor</b>	<b>\$47,300.00</b>	<b>\$ 85,030.00</b>	<b>\$122,760.00</b>

Sacramento River Small Diversion Fish Screen Program  
Mechanical Monitoring and Minor Maintenance Project  
Task Three

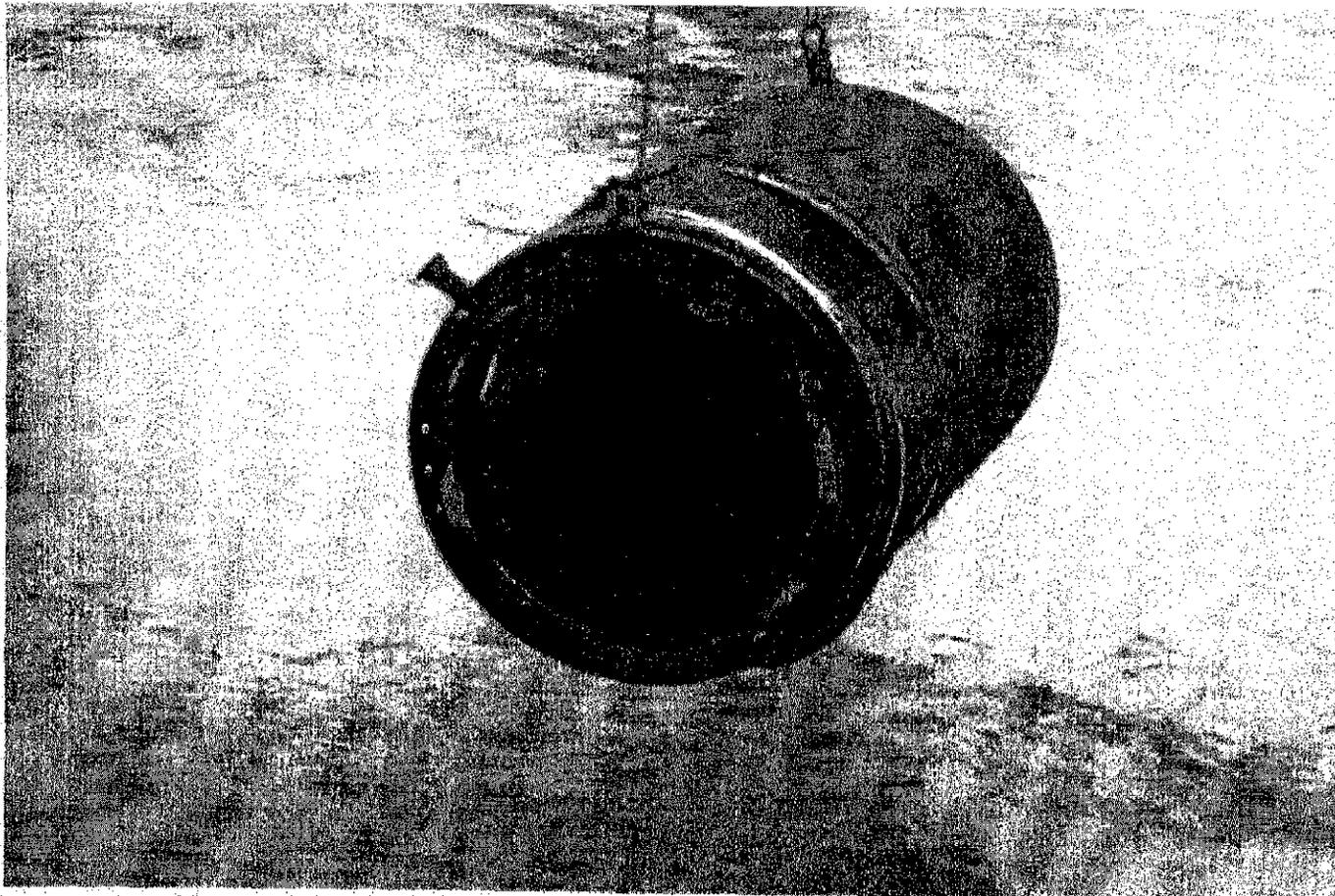
	Year 1	Year 2	Year 3
Site visits for maintenance inspections	\$ 2,500.00	\$ 5,000.00	\$ 7,500.00
Compling information, distributing reports technical review including benefits	\$ 1,400.00	\$ 2,400.00	\$ 4,800.00
<b>Total</b>	<b>\$ 3,900.00</b>	<b>\$ 7,400.00</b>	<b>\$ 12,300.00</b>
Project Management including benefits	\$ 2,450.00	\$ 5,250.00	\$ 8,750.00

	Year 1	Year 2	Year 3	Total Cost
Task One- Screen Retrofit	\$ 17,560.00			\$ 17,560.00
Task Two- Mechanical Monitoring and Maintenance	\$ 47,300.00	\$ 85,030.00	\$ 122,760.00	\$ 255,090.00
Task Three- Documentation, Distribution & Collaboration	\$ 3,900.00	\$ 7,400.00	\$ 12,300.00	\$ 23,600.00
Project Management	\$ 2,450.00	\$ 5,250.00	\$ 8,750.00	\$ 16,450.00
Total Project Cost	\$ 68,760.00	\$ 92,430.00	\$ 135,060.00	\$ 312,700.00



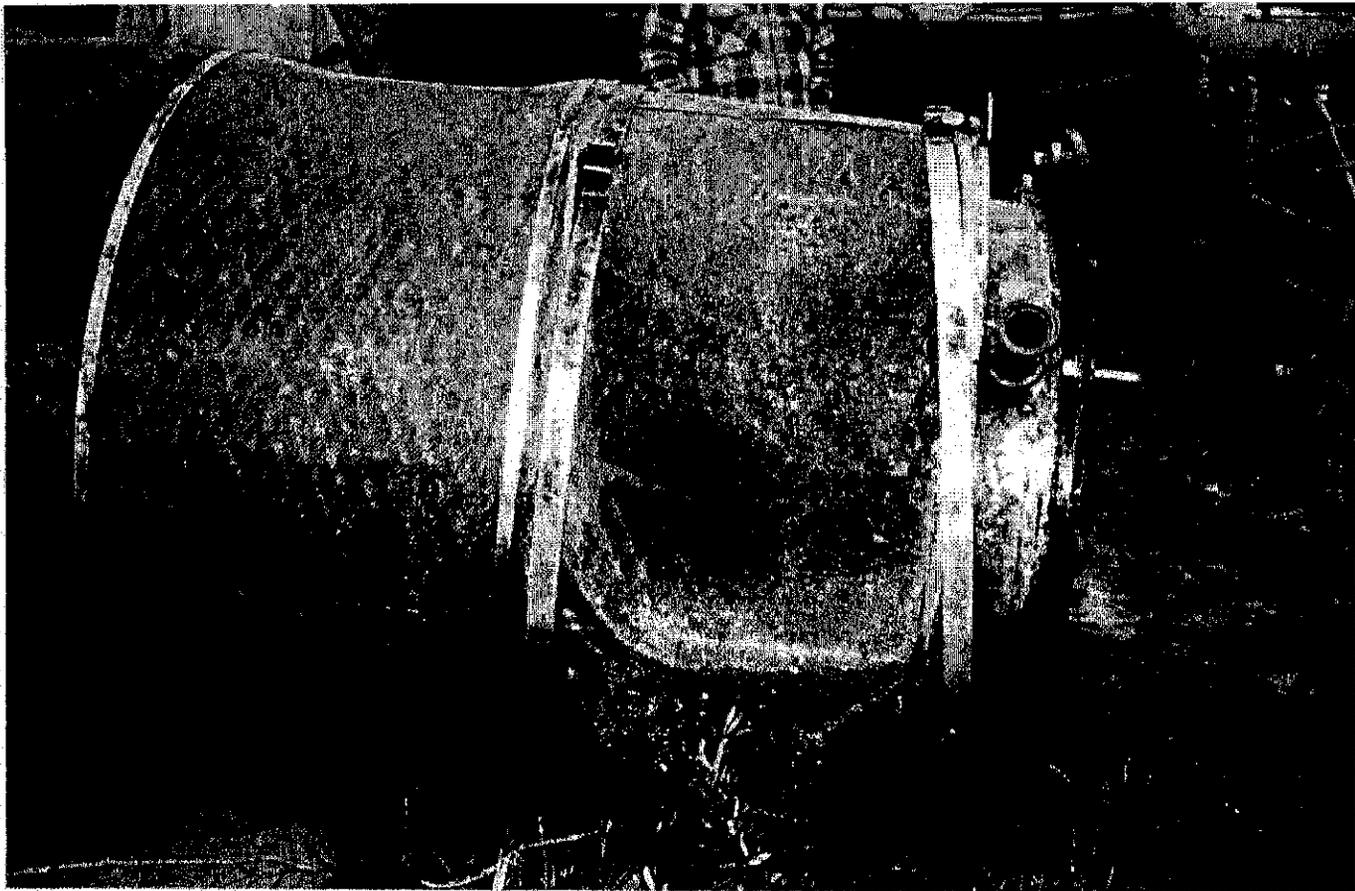
Source: Department of Fish and Game database

**Locations of Existing Unscrened Diversions in Middle Sacramento River**

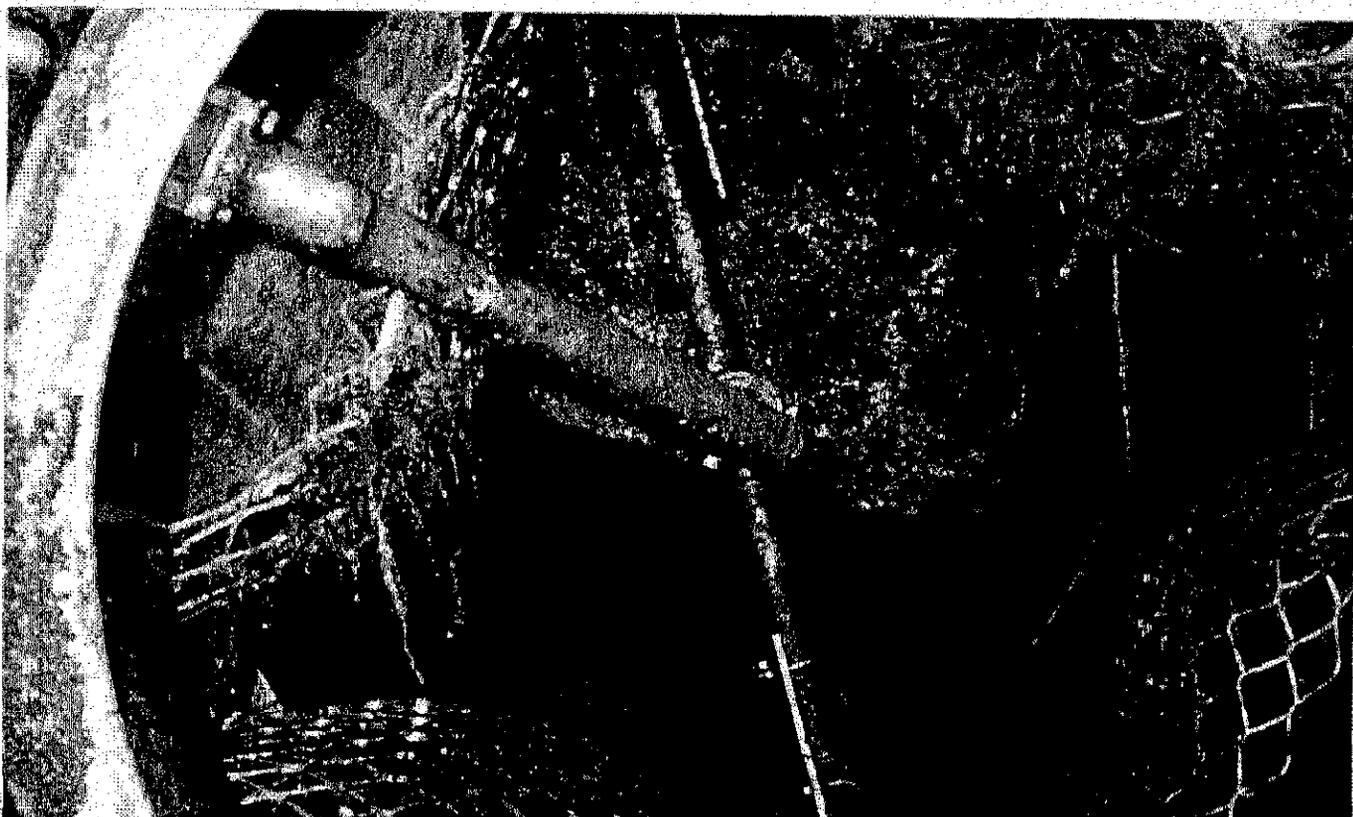


Butte Creek Farms fish screen removal.





The screen is filled with sand and algae growth.





Fish Screen removal at Andreotti site, September 1998. Multi-agency engineering investigation team examines the screens immediately after removal.





**FWA**  
*Family Water Alliance*

(530) 438-2026  
Fax: (530) 438-2940  
E-mail: fwa@mako.com

"Every Day is Earth Day on the Farm"

P. O. Box 365, Maxwell, California 95955

April 15, 1999

Jerry Maltby, Chairman  
Colusa County Board of Supervisors  
546 Jay Street  
Colusa, CA 95932

Dear Mr. Maltby:

Family Water Alliance would like to inform the Board of Supervisors that we have applied to the CALFED program for funding to supplement our existing fish screening program. This funding will allow for the enhancement of the program by providing mechanical monitoring for the fish screen installations that are currently in place in Colusa County.

This three-year program will help to provide further research opportunities for the development of economical, reliable fish screens that will be able to withstand the harsh Sacramento River conditions. We anticipate no third party impacts, and the future benefits to the landowners could be considerable.

If you have any questions or comments, please call us at any time.

Sincerely,

Rita Trainer  
Project Coordinator



United States  
Department of  
Agriculture

Natural  
Resources  
Conservation  
Service

100 Sunrise Blvd., Suite B  
Colusa, CA 95932  
(530) 458-2931

---

July 31, 1998

CALFED Bay-Delta Program  
Proposal Selection Committee  
Sacramento, CA 95814

To: CALFED Proposal Selection Committee:

The USDA Natural Resources Conservation Service (NRCS) office in Colusa County strongly supports the Family Water Alliance (FWA) proposal entitled "Sacramento River Small Diversion Fish Screen Mechanical Monitoring and Maintenance Project".

The NRCS recognizes the importance of continued mechanical monitoring to develop some principles for the reliable and economical installation of small fish screens. Our office looks forward to working with the FWA on this project in order to make fish screen installations in the Sacramento River successful.

Thank for your consideration of this proposal.

Sincerely,

Roney Gutierrez  
District Conservationist  
USDA - Colusa Field Office

## NONDISCRIMINATION COMPLIANCE STATEMENT

STD. 19 (REV. 3-95) FMC

COMPANY NAME

Family Water Alliance

The company named above (hereinafter referred to as "prospective contractor") hereby certifies, unless specifically exempted, compliance with Government Code Section 12990 (a-f) and California Code of Regulations, Title 2, Division 4, Chapter 5 in matters relating to reporting requirements and the development, implementation and maintenance of a Nondiscrimination Program. Prospective contractor agrees not to unlawfully discriminate, harass or allow harassment against any employee or applicant for employment because of sex, race, color, ancestry, religious creed, national origin, disability (including HIV and AIDS), medical condition (cancer), age, marital status, denial of family and medical care leave and denial of pregnancy disability leave.

## CERTIFICATION

*I, the official named below, hereby swear that I am duly authorized to legally bind the prospective contractor to the above described certification. I am fully aware that this certification, executed on the date and in the county below, is made under penalty of perjury under the laws of the State of California.*

Susan Sutton

OFFICIAL'S NAME

4-15-99

DATE EXECUTED

EXECUTED IN THE COUNTY OF

Colusa

PROSPECTIVE CONTRACTOR'S SIGNATURE

PROSPECTIVE CONTRACTOR'S TITLE

PROSPECTIVE CONTRACTOR'S LEGAL BUSINESS NAME

PART C: Certification Regarding Drug-Free Workplace Requirements

CHECK  IF THIS CERTIFICATION IS FOR AN APPLICANT WHO IS NOT AN INDIVIDUAL.

Alternate I. (Grantees Other Than Individuals)

A. The grantee certifies that it will or continue to provide a drug-free workplace by:

- (a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;
- (b) Establishing an ongoing drug-free awareness program to inform employees about--
  - (1) The dangers of drug abuse in the workplace;
  - (2) The grantee's policy of maintaining a drug-free workplace;
  - (3) Any available drug counseling, rehabilitation, and employee assistance programs; and
  - (4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;
- (c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);
- (d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will --
  - (1) Abide by the terms of the statement; and
  - (2) Notify the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace no later than five calendar days after such conviction;
- (e) Notifying the agency in writing, within ten calendar days after receiving notice under subparagraph (d)(2) from an employee or otherwise receiving actual notice of such conviction. Employers of convicted employees must provide notice, including position title, to every grant officer on whose grant activity the convicted employee was working, unless the Federal agency has designated a central point for the receipt of such notices. Notice shall include the identification numbers(s) of each affected grant;
- (f) Taking one of the following actions, within 30 calendar days of receiving notice under subparagraph (d)(2), with respect to any employee who is so convicted --
  - (1) Taking appropriate personnel action against such an employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973, as amended; or
  - (2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency;
- (g) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (a) (b), (c), (d), (e) and (f).

B. The grantee may insert in the space provided below the site(s) for the performance of work done in connection with the specific grant:

Place of Performance (Street address, city, county, state, zip code)

Family Water Alliance

37 Oak Street

Maxwell, CA 95955

Check  if there are workplaces on file that are not identified here.

PART D: Certification Regarding Drug-Free Workplace Requirements

CHECK  IF THIS CERTIFICATION IS FOR AN APPLICANT WHO IS AN INDIVIDUAL.

Alternate II. (Grantees Who Are Individuals)

- (a) The grantee certifies that, as a condition of the grant, he or she will not engage in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance in conducting any activity with the grant;
- (b) If convicted of a criminal drug offense resulting from a violation occurring during the conduct of any grant activity, he or she will report the conviction, in writing, within 10 calendar days of the conviction, to the grant officer or other designee, unless the Federal agency designates a central point for the receipt of such notices. When notice is made to such a central point, it shall include the identification number(s) of each affected grant.